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(71)Applicant : HITACHI LTD

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(72)Inventor : FUKUDA KENICHIRO
OSHIDA YOSHITADA

(54) POLARIZING MASK AND ITS PRODUCTION AS WELL AS PATTERN EXPOSURE METHOD AND PATTERN PROJECTION ALIGNER USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To embody the resolution equiv. to or higher than the resolution of the conventional phase shift method without the formation of such patterns of which the design is infeasible.

SOLUTION: A half-tone phase shifter 204 is arranged on the outer or inner side of a fine pattern group which is formed on a mask and has a polarization characteristic. This mask is irradiated with annular band-shaped illumination light in such a manner that the polarization direction is made rotationally symmetrical with respect to the optical axis on the pupil of the projecting optical system of this illumination light, by which the phase shifter is exposed with the transmitted light. The mask is otherwise irradiated with the annular band-shaped illumination light in non-polarization state and the transmitted light is passed through an analyzer which is arranged on the pupil and is rotationally symmetrical in the polarization direction, by which the phase shifter is exposed.

